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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,372	09/14/2004	Steven D. Richardson	04-0734	5371

64722 7590 04/10/2007

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EXAMINER	
MICHENER, JOSHUA J	
ART UNIT	**PAPER NUMBER**
3644	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,372	RICHARDSON, STEVEN D.	
	Examiner	Art Unit	
	Joshua J. Michener	3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *14-17,27-36,39 and 40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13,18-26,37 and 38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II, Species I deemed readable on claims 3 – 26, 37, and 38 in the reply filed on 1/25/2007 is acknowledged. The traversal is on the ground(s) that the requirements for combination/subcombination according to the MPEP 606.05c have not been met. This is found persuasive and the restriction requirement between Groups I and II is withdrawn. However, Applicant elected Species I, and claims 14 – 17 are drawn to species II with reflective surfaces and reflected energy and will be withdrawn. Further, Applicant failed to traverse the restriction requirement between Groups I and II with Group III. The restriction between Groups I – II and III is still deemed proper and is therefore made FINAL.

2. Claims 14 – 17, 27 – 36, 39, and 40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Objections

3. Claim 12 is objected to because of the following informalities:

Claim 12 recites, "wherein said plurality of emitters comprises: a first emitter; a first detector…" However, the "emitters" don't comprise "detectors" as they are separate elements. A rewording of the claim language is required to clarify. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 – 4, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Churchill et al. (US 5,352,090).

6. For claims 1 and 2, Churchill et al. discloses a vertical takeoff and landing aircraft with two rotors (12, 14) and a first detector (18) generating rotor signals indicative of a first position of a first rotor of the aircraft, the plurality of rotors lifting the aircraft; and a controller coupled to said detector, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33, it is noted some form of controller is inherent because the rotational speed of the rotors is adjusted), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Assuming arguendo that the "controller" is not inherent, see further rejection under 35 USC 103 in paragraph 11.

7. For claims 3 and 13, Churchill et al. discloses a vertical takeoff and landing aircraft comprising: an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a first detector (18) generating rotor signals

indicative of a first position of a first rotor of the aircraft, and a control coupled to said detector, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33, it is noted some form of controller is inherent because the rotational speed of the rotors is adjusted), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Assuming arguendo that the "controller" is not inherent, see further rejection under 35 USC 103 in paragraph 11.

8. For claim 4, Churchill et al., as modified, discloses the apparatus as in claim 3 wherein said plurality of detectors are coupled to said aircraft fuselage and are directed towards said plurality of rotors.

9. For claim 10, Churchill et al., as modified, discloses the apparatus as in claim 3 further comprising a plurality of emitters (12a, 14 (rotor blades)), said plurality of detectors generating said rotor signals in response to emitted energy from said plurality of emitters. It is noted, the rotor blades emit pressure pulses of air which in its broadest reasonable interpretation is being viewed as "emitted energy" thereby encompassing the scope of the claim.

10. For claim 12, Churchill et al., as modified, discloses the apparatus as in claim 10 wherein said plurality of emitters comprises: a first emitter; a first detector generating a first rotational

position signal indicative of a first position of a first rotor in response to emitted energy from said first emitter; a second emitter; and a second detector generating a second rotational position signal indicative of a second position of a second rotor in response to emitted energy from said second emitter; said controller coupled to said first detector and said second detector and adjusting rotational speed of said plurality of rotors in response to said first rotational position signal and said second rotational position signal.

11. **Claims 1 – 4, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Churchill et al. (US 5,352,090) in view of Skutecki (US 4,628,4550).**

12. For claims 1 and 2, Churchill et al. discloses a vertical takeoff and landing aircraft with two rotors (12, 14) and a first detector (18) generating rotor signals indicative of a first position of a first rotor of the aircraft, the plurality of rotors lifting the aircraft; and adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. But, Churchill, as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art

at the time the invention was made to modify Churchill et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 – 25).

13. For claims 3 and 13, Churchill et al. discloses a vertical takeoff and landing aircraft comprising: an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a first detector (18) generating rotor signals indicative of a first position of a first rotor of the aircraft, and a controller coupled to said detector, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33,), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. But, Churchill, as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Churchill et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 – 25).

14. For claim 4, Churchill et al., as modified, discloses the apparatus as in claim 3 wherein said plurality of detectors are coupled to said aircraft fuselage and are directed towards said plurality of rotors.

15. For claim 10, Churchill et al., as modified, discloses the apparatus as in claim 3 further comprising a plurality of emitters (12a, 14 (rotor blades)), said plurality of detectors generating said rotor signals in response to emitted energy from said plurality of emitters. It is noted, the rotor blades emit pressure pulses of air which in its broadest reasonable interpretation is being viewed as "emitted energy" thereby encompassing the scope of the claim.

16. For claim 12, Churchill et al., as modified, discloses the apparatus as in claim 10 wherein said plurality of emitters comprises: a first emitter; a first detector generating a first rotational position signal indicative of a first position of a first rotor in response to emitted energy from said first emitter; a second emitter; and a second detector generating a second rotational position signal indicative of a second position of a second rotor in response to emitted energy from said second emitter; said controller coupled to said first detector and said second detector and adjusting rotational speed of said plurality of rotors in response to said first rotational position signal and said second rotational position signal.

17. Claims 1 – 6, 8, 10 – 13, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank (US 3,515,485) in view of Churchill et al. (US 5,352,090) and Skutecki (US 4,628,455).

18. For claims 1 – 3, Frank discloses a vertical takeoff and landing aircraft comprising: an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least

one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a first detector (24, column 7, lines 5 – 19)) generating rotor signals indicative of a first position of a first rotor of the aircraft; a second detector (24, column 7, lines 5 – 19) generating rotor signals indicative of a first position of a second rotor of the aircraft; and an inherent generic controller/controls capable of operating the aircraft and adjusting the defective blade (column 9, lines 10 – 20), but fails to explicitly teach the controller coupled to said detectors, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals. Churchill et al. teaches of a rotor tracking system that adjusts a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33,). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Frank to adjust the rotor speeds in response to rotor signals from a tracking system in order to alleviate the aerodynamic imbalance as taught by Churchill. But, Frank, as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses an autopilot system comprising a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 – 25).

19. For claim 4, Frank, as modified, discloses the apparatus as in claim 3, wherein the detectors are coupled to said aircraft fuselage and have portions in the direction of a plurality of rotors thereby encompassing the scope of the claim.

20. For claim 5, Frank, as modified, discloses the apparatus as in claim 3 wherein the plurality of detectors are coupled to said plurality of rotors and directed towards said aircraft fuselage (figure 1 and 5).

21. For claims 6 and 8, Frank, as modified, discloses the apparatus as in claim 3, but fails to teach the detectors detect infrared energy. However, Frank (figure 7) discloses an alternate system using lasers. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to comprise of a laser based system in order to provide an virtually invisible light source for stealth at night. Furthermore, it would have been a matter of obvious design choice from one of ordinary skill in the art to substitute equivalents.

22. For claim 10, Frank, as modified, discloses the apparatus as in claim 3, comprising a plurality of emitters (72, 72'), said plurality of detectors generating said rotor signals in response to emitted energy from emitters.

23. For claim 11, Frank, as modified, discloses the apparatus as in claim 3, but fails to teach of an infrared system. However, Frank (figure 7) discloses an alternate system using lasers. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to comprise of a laser based system in order to provide an virtually invisible light source for stealth at night. Furthermore, it would have been a matter of obvious design choice from one of ordinary skill in the art to substitute equivalents.

24. For claims 12, 13 and 26, Frank, as modified, discloses the apparatus as claimed comprising a first and second emitter (70, 72') and a first and second detector generating rotational position signals from the rotors and the controller controlling the rotational speed of the rotors.

25. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank in view of Churchill and Skutecki as applied to claim 3 above, and further in view of Engels et al. (Us 5,205,710).

26. For claim 7 and 9, Frank, as modified, discloses the claimed apparatus as in claim 3, but fails to teach of an emitter that emits ultra violent energy. However, Engles et al. discloses an emitter for helicopter rotors that teaches of using infrared or ultra violent energy. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to use ultra violent energy as an equivalent alternative energy source to infrared as a matter of design choice as taught by Engles (column 2, line 20).

27. Claims 3, 18 – 25, and 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bass et al. (US 6,789,764) in view of Frank (US 3,515,485), Churchill et al. (US 5,352,090) and Skutecki (US 4,628,455).

28. For claim 3, Bass et al. discloses a dual-flight tandem rotor wing comprising an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a controller/(generic controls) capable of adjusting rotational speed of a plurality of rotors, but fails to teach of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors; and the controller coupled to and adjusting rotation speed of said plurality of rotors in response to said rotor signals. However, Frank discloses a vertical takeoff and landing aircraft comprising; a first detector (24, column 7, lines 5 – 19)) generating rotor signals indicative of a first position of a first rotor of the aircraft; a second detector (24, column 7, lines 5 – 19) generating rotor signals indicative of a first position of a

second rotor of the aircraft; a first and second emitter (70, 72') and a first and second detector generating rotational position signals from the rotors and adjusting the defective blade (column 9, lines 10 – 20). Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al. to comprise of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors in order to monitoring and adjust defective blades as taught by Frank (column 9, lines 10 – 20). But, Bass et al., as modified, fails to explicitly teach the controller is coupled to said detectors, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals. Churchill et al. teaches of a rotor tracking system that adjusts a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33,). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bass et al. to adjust the rotor speeds in response to rotor signals from a tracking system in order to alleviate the aerodynamic imbalance as taught by Churchill. But, Bass et al., as modified, fails to explicitly teach of the controller coupled to said detectors, said controller adjusting said rotors speeds. However, Skutecki discloses an autopilot system comprising a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 – 25).

29. For claims 18 and 19, Bass et al., as modified, discloses the apparatus as in claim 3, wherein said controller adjusts gas flow to said plurality of rotors; at least one gas control valve,

said controller adjusting rotational speed of said plurality of rotors via said at least one gas control valve (column 3, line 35 – column 4, line 35),

30. For claim 20, Bass et al., as modified, discloses the apparatus as in claim 3 comprising at least one brake device (column 4, lines 35 – 40, Bass).

31. For claims 21 and 22, Bass et al., as modified, discloses the apparatus as in claim 3 comprising a drag device comprising a flap (column 4, lines 35 – 40, Bass) wherein the controller is capable of adjusting the flap.

32. For claims 23 and 25, Bass et al., as modified, discloses the apparatus as in claim 3 wherein the controller switches said plurality of tandem rotor/wings between a vertical lift mode and a fixed wing mode (column 8, lines 30 – 43, Bass).

33. For claim 24, Bass et al., as modified, discloses the apparatus as in claim 3 comprising a transitional lift wing (16).

34. For claim 37, Bass et al. discloses a dual-flight tandem rotor wing comprising an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a controller/(generic controls) capable of adjusting rotational speed of a plurality of tandem rotor/wings, but fails to teach of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors; and the controller coupled to and adjusting rotation speed of said plurality of rotors in response to said rotor signals. However, Frank discloses a vertical takeoff and landing aircraft comprising; a first detector (24, column 7, lines 5 – 19)) generating rotor signals indicative of a first position of a first rotor of the aircraft; a second detector (24, column 7, lines 5 – 19) generating rotor signals indicative of a first position

of a second rotor of the aircraft; a first and second emitter (70, 72') and a first and second detector generating rotational position signals from the rotors and adjusting the defective blade (column 9, lines 10 – 20). Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al. to comprise of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors in order to monitoring and adjust defective blades as taught by Frank (column 9, lines 10 – 20). But, Bass et al., as modified, fails to explicitly teach the controller coupled to said detectors, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals. Churchill et al. teaches of a rotor tracking system that adjusts a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33,). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bass et al. to adjust the rotor speeds in response to rotor signals from a tracking system in order to alleviate the aerodynamic imbalance as taught by Churchill. But, Bass et al., as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses an autopilot system comprising a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 – 25).

35. For claim 38, Bass et al., as modified, discloses a first detector vertically in-line with a first emitter, corresponding with a first tandem rotor/wing, and generating a first tandem rotor/wing signal; and a second detector vertically in-line with a second emitter, corresponding

with a second tandem rotor/wing, and generating a second tandem rotor/wing signal; said controller adjusting rotational speed of said first tandem rotor/wing relative to said second tandem rotor/wing in response to a comparison between said first tandem rotor/wing signal and said second tandem rotor/wing signal (figure 5, Churchill).

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. SEE PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua J. Michener whose telephone number is 571-272-1467. The examiner can normally be reached on Monday through Friday 7-4..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TERI PHAM LUU
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Joshua J Michener